

Safety

RADIATION PROTECTION PROGRAM

Summary. This regulation establishes policy and responsibilities for safe use of radioactive materials and U.S. Army supply items containing radioactive materials in USAREUR.

Applicability. This regulation applies to DOD organizations, U.S. Government agencies, and U.S. and host nation civilian workers and contractors who handle radioactive commodities or ionizing radiation producing devices on U.S. Army installations or under U.S. Army control in the European theater.

Impact on the Unit Manning System. This regulation does not affect the Unit Manning System.

Internal Control Systems. This regulation is not subject to the requirements of AR 11-2. It does not contain internal control provisions.

Supplementation. Commanders will not supplement this regulation without Commander in Chief, USAREUR (AEAGA-S), approval.

Forms. Only forms ending with the suffix "-R" may be reproduced locally on 8 1/2- by 11-inch paper through the servicing forms management office. Other forms will not be reproduced; they will be ordered by the unit or organization publications officer from the United States Army Printing and Publications Center, Europe, or as stated in the authorizing directive.

Interim Changes. Interim changes to this regulation are not official unless authenticated by the Adjutant General, USAREUR. Interim changes will be destroyed on their expiration dates unless sooner superseded or rescinded.

Suggested Improvements. The proponent of this regulation is the Office of the Deputy Chief of Staff, Personnel, HQ USAREUR/7A. Users may send comments and suggested improvements to this publication on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to the Commander in Chief, USAREUR, ATTN: AEAGA-S, APO 09403.

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1. PURPOSE

This regulation establishes policy and responsibilities for safe use of radioactive materials and U.S. Army supply items containing radioactive materials. Licensing, storage, transport, and maintenance of radioactive items and ionizing radiation-producing devices are subject to this regulation.

2. REFERENCES

Appendix A lists references.

3. SCOPE

a. This regulation applies to DOD organizations, U.S. Government agencies, and U.S. and host nation civilian workers and contractors who handle radioactive

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commodities or ionizing radiation-producing devices on U.S. Army installations or under Army control in the European theater.

b. This regulation does not apply to subjects governed by:

(1) AR 40-47 (Department of Defense Medical Examination Review Board).

(2) AR 50-5 (Nuclear and Chemical Weapons and Material - Nuclear Surety).

c. This regulation applies to medical and nuclear radioactive materials only when they are excess, unwanted, or no longer under the direct supervision of medical or nuclear staff.

4. OBJECTIVES

This regulation:

a. Defines command policy and responsibilities for safeguarding against potential radiation health hazards in the European theater.

b. Establishes channels of communication to review and approve of USAREUR operations involving radiation protection before operations are implemented.

c. Establishes channels of communication for community radiation protection officers (RPOs) to be informed of radioactive materials planned for purchase and use in USAREUR.

d. Ensures commanders give radiological protection high priority and command attention.

e. Ensures plans and resources exist to respond to radiological emergencies.

f. Ensures that the life cycle of radioactive commodities proposed for use is assessed before fielding the commodities in the European theater. The assessment will include availability of proper detection equipment and trained personnel, a method of disposal, and the effect on the environment.

5. POLICY

a. Requirements for radiological protection in the European theater will be equal to or greater than the requirements published by:

(1) The U.S. Nuclear Regulatory Commission (NRC) (parts 0 through 199, title 10, Code of Federal Regulations (CFR), Energy).

(2) The U.S. Department of Transportation (DOT) (parts 100 through 199, title 49, CFR, Transportation).

(3) The host nation. These requirements pertain to the host nation's armed forces and to conditions stated in Status of Forces Agreements.

(4) U.S. Army regulations. These requirements pertain to radiation protection governed by, but not limited to, the 40-, 385-, and 700-series publications. Appendix A lists regulations that contain radiation protection requirements.

b. When regulations differ concerning radiation levels or frequency, the most conservative guidance will be followed. The Chief, Safety Division, Office of the Deputy Chief of Staff, Personnel, HQ USAREUR/7A (ODCSPER), ATTN: AEAGA-S, APO 09403, may grant a specific exception in writing.

6. RESPONSIBILITIES

a. Commanders of USAREUR major, separate, and assigned commands (USAREUR Reg 10-5) and U.S. Army units operating in the European theater will:

(1) Designate, in writing, an organization in each command responsible for radiation protection.

(2) Appoint an RPO and an alternate. Commanders will send a copy of appointment documents and information on the appointees' education, training, and experience in radiation protection, to the USAREUR Radiation Control Committee (RCC), through the USAREUR RPO, for approval.

(3) Provide adequate resources to ensure personnel, property, and the environment are safe from radiation and radioactive materials.

(4) Provide trained personnel, proper equipment, and sufficient radiation detection instruments to perform surveys and to handle emergencies.

(5) Conduct and document yearly command inspections of supply, storage, and maintenance areas that have radiation sources or radioactive supply items.

(6) Maintain a qualitative listing of radioactive supply items and radiation devices. Commanders will supply military communities (MILCOMs) with this listing, as well as information on operations involving radiation in the MILCOMs.

(7) Maintain standards for work conditions and provide guidance on operating procedures for using, storing, and maintaining radioactive supply items. Guidance will comply with pertinent regulations and NRC license conditions.

(8) Establish a file of NRC licenses and DA authorizations for radioactive supply items used in the command.

(9) Ensure that a qualified local radiation protection officer (LRPO) and an alternate are appointed, as required by AR 385-11.

(10) Review and approve, in writing, the appointment of each command LRPO and alternate. Commanders will provide a list of all current LRPOs and alternates to the USAREUR RPO at least yearly. Commanders will notify the USAREUR RPO of changes to the list between yearly updates.

(11) Comply with the provisions of AR 385-11, chapter 3, pertaining to individually controlled radioactive items. The USAREUR Radiation Control Officer (RCO) must approve the appointment of LRPOs and their alternates responsible for individually controlled items, in writing, before they assume these

duties. Movements of individually controlled items off U.S.-controlled facilities must be coordinated with and approved by the USAREUR RCO at least 24 hours before such a move.

b. The Commander, 200th Materiel Management Center (Theater Army) (200th MMC (TA)), will:

(1) Operate the Radioactive Material Control Point according to the requirements of AR 385-11, chapter 3.

(2) Review, comment on, or concur with applications for NRC license or DA authorization to use, store, maintain, or possess radioactive material.

(3) Designate the 200th MMC(TA) RCO as a permanent member of the RCC.

(4) Manage the USAREUR Controlled Radioactive Inventory Serialization Program.

c. Heads of HQ USAREUR/7A staff offices will:

(1) Support the USAREUR Radiation Protection Program.

(2) Designate a single USAREUR point of contact for nonmedical radiation protection issues.

d. The Deputy Chief of Staff, Personnel (DCSPER), USAREUR, will:

(1) Control the USAREUR Radiation Protection Program policy through the RCC.

(2) Establish USAREUR policy regarding the USAREUR Radiation Protection Program.

(3) Coordinate licensing issues for radiation-producing devices and materials.

(4) Disseminate Chief Surgeon, USAREUR, policies regarding health hazards of ionizing and nonionizing radiation.

(5) Appoint the Chief, Safety Division, ODCSPER, to chair the USAREUR RCC.

(6) Designate a qualified USAREUR RPO to direct and manage the Radiation Protection Program.

(7) Conduct studies to ensure compliance with approved policy and regulations.

e. The Deputy Chief of Staff, Operations (DCSOPS), USAREUR, will:

(1) Plan and distribute Army supply items and operations involving ionizing radiation using radiation protection requirements, guidance, and practices.

(2) Notify the USAREUR RPO of milestones completed in distributing radioactive supply items.

(3) Designate a permanent member and an alternate member, as required, to the USAREUR RCC.

(4) Provide advice and recommendations for monitoring contamination (Nuclear Chemical Division, Office of the Deputy Chief of Staff, Operations (ODCSOPS), HQ USAREUR/7A).

f. The Deputy Chief of Staff, Logistics (DCSLOG), USAREUR, will:

(1) Formulate USAREUR policy for storing, inventorying, and transporting radioactive items, including supply items containing radioactive materials.

(2) Coordinate policy statements concerning radiation and radioactive materials with the USAREUR RPO and RCC. The USAREUR RPO will review the statements and submit them to the USAREUR RCC for concurrence.

(3) Designate a permanent RCO and an alternate LRPO member to the USAREUR RCC.

g. The Deputy Chief of Staff, Engineer (DCSENGR), USAREUR, will:

(1) Provide a representative to the RCC to advise on the environmental effects of operations involving radioactive materials.

(2) Advise the USAREUR RPO on environmental effects of a radiological accident and on means for recovery.

h. The Chief, Public Affairs, USAREUR, will.

(1) Provide a member to the RCC, as required, to advise the committee on the content of public statements concerning radioactive supply items and accidents.

(2) Assist local public affairs personnel with press releases concerning radioactive supply items, radiation, and accidents involving radioactive materials.

(3) Designate a member to the RCC.

i. The Chief Surgeon, USAREUR, will provide medical advice, guidance, and assistance on the health hazards of radiation and radioactive materials.

j. The Provost Marshal, USAREUR, will:

(1) Provide a member, as required, to the USAREUR RCC to advise on security matters involving U.S. Army radioactive supply items.

(2) Coordinate military police security and traffic control at accident sites involving radioactive materials.

k. The USAREUR RPO will:

(1) Supervise the technical, operational, and administrative aspects of the USAREUR Radiation Protection Program to minimize health hazards associated with ionizing radiation operations.

(2) Review and coordinate technical advice, guidance, and instructions with U.S. Government and DA organizations on issues of health, physics, and radiation protection.

(3) Ensure that personnel using radioactive supply items receive adequate training in health hazards caused by radiation.

(4) Provide technical support, develop policy, and issue guidance on radiation protection to headquarters and field offices.

(5) Review, comment on, and consider concurrence on procedures for storing, transporting, and disposing of radioactive waste material in the European theater.

(6) Supervise the U.S. Army dosimetry program in USAREUR. The USAREUR RPO will review annually incidences of personnel receiving ionized radiation to ensure they conform to criteria published by the Ionizing Radiation Dosimetry Center, Lexington, KY.

(7) Ensure that USAREUR major, separate, and assigned commands and their subordinate units have trained personnel; appropriate radiation, detection, indication, and computation (RADIAC) equipment; and sufficient funds to implement a radiation protection program.

(8) Maintain a copy of NRC licenses and DA authorizations. The USAREUR RPO will disseminate the licenses or a summary of the conditions and requirements of the licenses, as they apply to USAREUR.

(9) Review reported radiation accidents or unusual occurrences.

(10) Ensure plans and resources exist to cope with radiation emergencies.

1. The Commander, 517th Maintenance Battalion (517th Maint Bn) (Test, Measurement, and Diagnostic Equipment ((TMDE))), will:

(1) Coordinate activities involving radioactive material with the 517th Maint Bn (TMDE) RCO. The RCO will recommend the RCC approve or disapprove the activities.

(2) Supervise the operation of the RADIAC calibration maintenance program for USAREUR at the 524th Maintenance Company (524th Maint Co) (Pirmasens) and at calibration sites throughout the European theater.

(3) Operate the USAREUR Radioactive Waste Processing Facility.

(4) Designate an adviser from both the 517th Maint Bn and 524th Maint Co to attend RCC meetings.

(5) Immediately calibrate and repair RADIAC instruments during USAREUR emergency situations.

(6) Use laboratory proportional and liquid scintillation techniques to analyze samples for possible contamination.

m. The Chief, 10th Medical Laboratory (10th MEDLAB), will:

(1) Provide onsite radiation and radioactive contamination health physics and ground surveys in USAREUR at the request of the USAREUR RPO.

(2) Present quarterly courses on radiation protection to selected personnel.

(3) Provide the USAREUR RCO, the 10th MEDLAB RCO, and the USAREUR RPO advice on the health hazards of ionizing radiation.

(4) Operate a laboratory system for identifying and quantifying environmental levels of radioactive material.

(5) Maintain a Radiological Advisory Medical Team capable of reporting to the scene of a radiological accident with complete protective clothing and portable survey meters for detecting alpha, beta, and gamma radiation.

(6) As a representative of the Chief Surgeon, USAREUR, designate a member to the RCC.

n. MILCOM commanders will:

(1) Appoint an RPO and an alternate. Community commanders will send a copy of the appointment document, and information on the appointees' education, training, and experience in radiation protection to the USAREUR RCC, through the USAREUR RPO, for approval.

(2) Maintain a current list of radiation activities and radioactive supply items and devices in the MILCOM.

(3) Provide adequate resources, trained personnel, and proper equipment and perform annual radiological surveys.

(4) Be prepared to respond to radiological accidents in the MILCOM.

(5) Publish radiation protection responsibilities and guidance for the MILCOM.

(6) Coordinate the use or discontinuation of radiation operations in the community with the radiation protection points of contact (POCs) for MILCOM tactical and tenant units.

7. THE USAREUR RCC

a. The USAREUR RCC provides unification and direction to the Radiation Protection Program in the European theater. The RCC also advises the Commander in Chief, USAREUR (CINCUSAREUR).

b. The USAREUR RCC establishes procedures for using radiation and radioactive materials. The committee meets at least quarterly to review management and implementation of the Radiation Protection Program.

c. USAREUR RCC responsibilities include, but are not limited to, the following:

(1) Reviewing proposals for using, storing, transporting, and maintaining radioactive materials, radioactive supply items, and radiation-producing equipment. The USAREUR RCC will recommend the commander approve or disapprove the proposals.

(2) Recommending policies to the Commander in Chief, USAREUR, that ensure personnel are not unnecessarily exposed to radiation and that minimize the release of radioactive materials in the environment.

(3) Reviewing and recommending approval of USAREUR major command and MILCOM RPOs.

(4) Ensuring that the committee recorder prepares and submits minutes of meetings for command approval and maintains a record of completed and outstanding actions.

(5) Reviewing reports of incidents involving radiation or radioactive materials to determine the cause. The USAREUR RCC will recommend the appropriate action to the Commander in Chief, USAREUR.

(6) Certifying the qualifications of the USAREUR RPO and the USAREUR RCO and for recommending their appointment to the Commander in Chief, USAREUR.

(7) Reviewing applications for DA authorizations and NRC licenses as they apply to use and storage in the European theater. The USAREUR RCC will concur or nonconcur with the proposal and recommend appropriate command action.

d. The USAREUR RCC advises the Commander in Chief, USAREUR, on how to provide a safe workplace when radiation devices are used. The USAREUR RCC consists of permanent, guest, and other members, as required. Membership is not limited to USAREUR personnel. The USAREUR RCC chairperson may invite private or federally employed individuals to attend RCC meetings when the chairperson deems their expertise or cooperation is beneficial to the committee. Heads of HQ USAREUR/7A staff offices and divisions listed below will appoint committee members as indicated:

- (1) DCSPER -- USAREUR RPO.
- (2) DCSPER -- Chairman, USAREUR RCC (Chief, Safety Division).
- (3) DCSOPS -- Chief, Nuclear Chemical Division.
- (4) DCSLOG -- DCSLOG representative.
- (5) DCSENGR -- Representative.
- (6) Chief Surgeon -- A 10th MEDLAB (Radiological Hygiene Branch) representative.
- (7) Chief, Public Affairs -- Representative.
- (8) Provost Marshal -- Representative.

e. The Chief, Safety Division, ODCSPER, who is the USAREUR POC for nonmedical radiation protection issues, will chair the USAREUR RCC. A quorum for the USAREUR RCC will consist of the chairperson, the USAREUR RPO, the USAREUR RCO, and a

representative from the 10th MEDLAB. The USAREUR RCC chairperson may request technical assistance from nonmember's offices, whether military or host nation, or may request that specific representatives attend USAREUR RCC meetings. The RCC chairperson will:

(1) Be responsible for calling meetings and for ensuring that command-approved actions are staffed, and that the minutes of meetings are distributed to members and interested offices.

(2) Request the presence of representatives from HQ USAREUR/7A staff offices and USAREUR major, separate, and assigned commands. The following USAREUR offices and commands are examples and do not limit the chairman's choices:

- (a) 524th Maint Co (TMDE).
- (b) 517th Maint Bn (TMDE).
- (c) Host Nation Activities Office.
- (d) Public Affairs Office.
- (5) Office of the Provost Marshal.

f. RPOs from USAREUR major commands and MILCOMS and representatives of the German Armed Forces should attend a meeting of the USAREUR RCC at least once a year to remain aware of current events.

8. TRANSPORTING RADIOACTIVE MATERIALS

a. General information:

(1) Transportation of radioactive materials is subject to hazardous material transportation regulations (app A). These regulations reflect international standards and are similar in every country, with few varying restrictions. Radioactive shipments that comply with U.S. regulations will be accepted by all European countries. 49 CFR, Transportation, subchapter C, provides guidance for transporting hazardous material by rail, aircraft, vessel, and motor vehicles.

(2) The pertinent portions of 49 CFR are parts 100 through 199.

(3) Technical Manual (TM) 38-250, Preparation of Hazardous Materials for Military Air Shipment, is a tri-service manual with a chapter on radioactive materials. Units shipping radioactive materials should have this TM.

b. Methods of transporting radioactive materials.

(1) Personnel can usually transport radioactive material to the USAREUR Radioactive Waste Processing Facility (RWPF) by exception, as described in sections 173.421, 173.422 or 173.424, 49 CFR, as applicable. Personnel should review 49 CFR to determine correct terms and requirements for hazardous material shipments. A copy of 49 CFR should be readily available in hazardous material shipping offices.

(2) Classifying or determining the proper shipping name of material is the first step in preparing any shipment. Part 172.101, 49 CFR, Hazardous Material

Table, contains the shipping name of hazardous materials. This name must be conspicuously listed on shipping documents. Examples of proper shipping names for radioactive material are listed below:

- (a) Radioactive materials, instruments, and articles.
- (b) Radioactive materials, limited quantity, n.o.s.
- (c) Radioactive materials, articles, manufactured from natural or depleted uranium or thorium.
- (d) Radioactive materials, n.o.s.

NOTE: n.o.s. is a transportation acronym for "not otherwise specified."

(3) Selection of the proper shipping name depends on the type and quantity of radioactive material to be shipped. The following information can be located in the Hazardous Material Table when the proper shipping name has been determined:

- (a) Hazard class.
- (b) United Nation identification number.
- (c) Label required (if not excepted).
- (d) Packing reference in 49 CFR for that specific shipment.
- (e) Maximum net quantity permitted in one package for transportation by passenger-carrying aircraft or cargo-only aircraft.

NOTE: TM 38-250 uses the symbol + to indicate hazardous materials that must be transported on cargo-only aircraft.

(4) Classifying radioactive material starts with knowing the type and quantity of the material. Paragraph 8 gives guidance on storing unwanted radioactive material and radioactive supply items.

(5) The A1 and A2 quantities (see glossary) for a single type of radioactive material are listed in part 173.435, 49 CFR. These quantities are used to determine the maximum activity permitted in a Type A package. The activity unit used in the table is Curies (Ci).

(6) The table in part 173.435, 49 CFR, contains two columns. The A1 column is for special form sources and the A2 column is for normal form sources. Special form describes a radioactive source that is sealed or encapsulated. This sealed source must be certified as having successfully passed certain tests prescribed by part 173.469, 49 CFR. Normal form is defined as any other type of radioactive material. Usually, normal form values should be used when the shipper does not have a statement that the source is special form.

(7) In general, the three ways to classify radioactive material for shipment are:

- (a) Excepted material.

(b) Type A shipment.

(c) Type B shipment.

(8) Shipping by exception is the most common and is discussed in c below. Type A shipment requirements will be listed, but this quantity of radioactivity should be approved by an RPO at the division or higher command level before shipment. Type B shipments are for large sources (for example, used reactor fuel elements). Type B shipments are for large sources (such as used reactor fuel elements). There is no requirement for Type B shipments in USAREUR. Assistance is available at the USAREUR RWPf, Pirmasens, Federal Republic of Germany (GE) (tel: 495-6486/7293) or at the 10th MEDLAB, Landstuhl, GE (tel: 486-8237/8562).

c. Shipping by exception.

(1) Shipping by exception is the easiest way to ship radioactive materials and reflects the slight hazard most radioactive shipments in USAREUR present. Shipment by exception means the material may be transported in any strong, tight container. Type A shipment requires a specification container. A specification container must be approved by the Department of Transportation (DOT) and must be marked by the manufacturer as conforming to the requirements of parts 173.411 and 173.412, 49 CFR.

(2) The requirements for "Radioactive material, limited quantity" shipments are listed in part 173.421, 49 CFR. The information below basically describes those requirements.

(a) The quantity must not exceed the limits specified in part 173.423, 49 CFR.

(b) Material must be packed in a strong, tight package.

(c) The outside of the package must not exceed contamination limits specified in part 173.443(a), 49 CFR.

(d) The radiation level on the external surface of the package must not exceed 0.5 millirem per hour (measured using AN/PDR 27 or the equivalent).

(e) The inner packaging must be marked "RADIOACTIVE."

(f) The package must not contain more than 15 grams of Uranium-235.

(3) Part 173.423, 49 CFR, is a table listing radioactivity quantities for limited quantity shipments. The third column, titled "Material Package Limits," refers to a limited quantity shipment. Using normal form and assuming 15 millicuries (mCi) of Promethium-147 is the shipment, part 173.425, 49 CFR, table 7, indicates that the limit is 0.991 times the A2 value for Promethium-147. Use of exponential notation is common 10E-3 and is the same as 0.001.

(4) The limit for the shipment is 0.001 times the A2 value for Promethium-147. The A2 value of most radioactive materials is listed alphabetically in part 173.435, 49 CFR, with regard to their chemical symbol. The A2 value for Promethium-147 is 25 Ci.

When multiplying 0.001 by 25 Ci, the limit is 0.025 Ci or 25 mCi of Promethium-147. If the Promethium-147 exceeds this amount, it would have to be shipped as a Type A shipment or separated into multiple packages, each package having 25 or less mCi of Promethium-147. Examinations of A2 values reveal that some radioisotopes have an unlimited amount for limited quantity shipment. Uranium-238, depleted uranium, natural uranium, thorium-232, and natural occurring thorium have unlimited A2 values.

(5) A strong, tight container is required for limited quantity shipping. Any container that will not leak radioactive materials during normal transportation conditions satisfies the "strong, tight" requirement. This is called a performance requirement, in contrast to the specification requirement for Type A shipments. A metal container lined with a 3-mil polyethylene liner is the preferred container in USAREUR. Any metal container or drum satisfies the strong, tight requirement. The container does not have to be approved by DOT or have the manufacturer's marking. This provision of limited quantity shipment is an advantage over the need for a specification container required for Type A quantities.

(6) The level of contamination for limited quantity shipments will be marked on the outside of the container. DOT limits of contamination are listed in part 173.44(a), 49 CFR.

(a) An example of contamination marking is: The outside surface of a package containing the M43A1 Chemical Agent Detector is wiped. The area wiped is 300 square centimeters, the counts per minute (cpm) measurement, using an AN/PDR 56F (or any other alpha meter), is 50 cpm over the background of the meter and the efficiency of the meter is 10 percent. The calculation of the contamination level could be done as follows:

1. Dose per minute (dpm) allowed = 2.2 dpm per square centimeter (cm) (from 173.44(a), 49 CFR, table 10) times 300 square cm = 660 dpm.

2. dpm found = 50 cpm times the efficiency factor of (1 divided by the efficiency 0.1) 10 = 500 dpm.

3. Since (b) below is lower than (a) above, the package complies with DOT requirements of table 10.

(b) The allowable contamination limit of 2.2 dpm per square cm may be detected more easily by increasing the area wiped. Based on calculations above, if a 300 square cm area is used, the table 10 limit becomes 660 dpm. If six locations are wiped over an area of 100 square cm (4 inches by 4 inches) each, the wipe represents an area of 600 square cm and the allowed dpm becomes 1,320 dpm per 600 square cm.

(7) The level of external radiation emitted from a package must not exceed 0.5 millirem per hour. If this level is exceeded and cannot be reduced by shielding, Type A shipping is required.

(8) Part 173.421-1, 49 CFR, describes an additional DOT requirement for limited quantity shipment. Essentially, it is a notice certifying that the

shipment has been packaged according to the requirements in 7(b) and (c). The notice must contain the name of the consignor or consignee and the statement, "This package conforms to the conditions and limitations specified in 49 CFR 173.421 for excepted radioactive material, limited quantity, n.o.s., UN 2910." This notice may be enclosed in the package, placed on the package, or included with the packing list. The word "RADIOACTIVE" must be marked on the inner or outer packaging. Limited quantity shipments are excepted from:

- (a) Specification containers.
- (b) Shipping paper information.
- (c) Radioactive warning labels.

(9) Another proper shipping name for an excepted radioactive material shipment is "Radioactive Material, Instruments, and Articles."

(a) The requirements for this type of shipment are very similar to those for the limited quantity category. This category of manufactured items (U.S. Army supply items) that contain radioactive materials in gaseous or nondispersible solid form must meet the following conditions:

1. The total quantity of radioactive material must comply with part 173.423, 49 CFR, table 7, for instrument and articles, column 1 and 2.

2. External radiation levels and contamination limits may not exceed 0.5 millirem per hour.

3. The conditions of part 173.421, 49 CFR, must be observed.

NOTE: Subparagraph (9) refers to instruments and articles and is not limited to quantity and the UN hazard number changes.

(b) Two additional requirements for an excepted instrument and article shipment are radioactivity limits on the total package and the individual items listed in part 173.423, 49 CFR, table 7, column 2. Ten items may be shipped in one package, for example, but eleven might exceed total package limits. Also, the radiation emitted from the unpackaged item must be measured and may not exceed 10 millirem per hour.

(10) A final method of shipping radioactive material by exception to some DOT hazardous material transportation regulations is by shipping under the proper shipping name, "Radioactive material, articles manufactured from depleted uranium," or from natural uranium or from natural thorium, as appropriate. The conditions for this type of shipment are listed in part 173.424, 49 CFR. The conditions are similar to the limited quantity shipment described in subparagraphs (4) through (8) above.

d. Type A shipment of radioactive material.

(1) Type A shipping is required when shipments do not meet requirements listed in c above. The most common problem with Type A shipment is excessive

amounts of radioactivity. Dividing a Type A shipment into several packages is a solution that conforms to transportation regulations.

(2) A strong, tight container is not an acceptable package requirement for Type A shipments. Type A shipment containers must meet the general packaging specification 7A requirements in part 178.350, 49 CFR. TM 38-250, attachment 2, lists DOT specification container numbers. DOT specification 17H barrels are commonly used for radioactive shipments.

(3) The radioactive material limit for a Type A package is the A1 or A2 value listed in part 173.435, 49 CFR. If mixtures of known activities are to be shipped, the limit may be calculated by adding the fractions of each material divided by the appropriate A1 or A2 value. The limit for the package is now unity. The sum of the fractions must not exceed 1. Multiple radioactive nuclides is described in part 173.433, 49 CFR.

(4) Shipping paper requirements for Type A shipments are more detailed than for shipping by exception. In addition to the proper shipping name, the name of each radionuclide, the activity of each nuclide, the physical and chemical form of the material, and the category of the label attached to the package must be described on or attached to the shipping paper (parts 172.201 through 172.202, 49 CFR). Certification by the shipper follows the usual hazardous material shipping requirements and is described in part 172.204, 49 CFR.

(5) Labeling is required for Type A shipments. There are three radioactive material transportation labels. Radioactive White-I is the lowest category; Radioactive Yellow-II is the intermediate category; Radioactive Yellow-III is the highest category. Unless excepted from labeling as described in c above, the proper label will be affixed to opposite sides of each package (for this reason, each package requires two labels). Part 172.403, 49 CFR, contains labeling criteria and parts 172.436, 172.438, and 172.440, 49 CFR, contain a diagram and description of each label.

(6) Marking should not be confused with labeling. Marking refers to notices that must be marked or affixed to the package. Examples of when marking is necessary are when the gross weight of a package exceeds 110 pounds; when marking the type of shipment (Type A); or when marking RADIOACTIVE, as required for excepted shipments.

(7) RPOs at division or higher command level will coordinate and approve shipments requiring Type A containers. Type A shipments are not usually necessary in the European theater.

9. STORING RADIOACTIVE MATERIALS

a. General information:

(1) Excess radioactive supply items will be stored in a segregated storage area. The area will be posted with a USAREUR Poster 385-1-14 (Danger Radioactive). The poster reminds people in the area that the stored items contain radioactive material and alerts security and fire personnel of a possible hazardous situation during a fire, explosion, or flood.

(2) Radioactive supply items will be stored in a secured area that does not contain flammable or explosive materials. Food, tobacco, and cosmetics may not be stored or used in these areas.

(3) Storage areas will be equipped with RADIAC survey meters that have been calibrated within the past 90 days.

(4) Each storage area will be surveyed when it is established, when items are added, and when items are removed before release for storage of nonradioactive items. The storage area will be inspected at least monthly if no changes have occurred. Posting USAREUR Poster 385-1-14 and additional controls should be appropriate for surveys.

(5) Excess serviceable radioactive supply items should be turned in to a supply support activity or directly to the General Support Center, Kaiserslautern (GSCK). Prior coordination is required with the GSCK Receiving Branch, ETS 483-7225. Units should use procedures in USAREUR Regulation 710-2, appendix D, for turn-in to their supporting SSA, unless direct turn-in to GSCK is more convenient.

b. Defective radioactive supply items:

(1) Broken radioactive supply items present a possible contamination and ingestion hazard and require special handling and storage criteria. In USAREUR, any radioactive commodity that is broken in the field will be immediately wrapped in two plastic bags and transported to the RWPF. Once the device is wrapped in plastic, the plastic wrapping should not be removed. Additional wrapping or packaging may be used, but the original wrapping should stay in place to prevent the radioactive material from spreading. Store broken radioactive supply items, especially those containing tritium, in a well-ventilated area, preferably in an outside storage area. Ventilating an exposed area is the most effective method for decontaminating tritium.

(2) Supply items containing tritium have presented contamination problems in USAREUR. Specific packaging instructions have been issued by the 200th MMC (TA) for returning these devices to Letterkenny Army Depot. The item manager of the 200th MMC (TA) must release items to be sent to the RWPF or to the continental United States. The 200th MMC(TA) Radiation Control Officer, ATTN: AEAGD-MMC-RA-R, APO 09052-5356 (tel: 494-6337/7369), can determine the appropriate item manager.

c. Storing radioactive items may present unique problems in USAREUR. Mission requirements may demand radioactive supply items be stored with ammunition and fuel. Time constraints may require radioactive items to be stored with nonradioactive items for rapid deployment. The activity RPO will review storage procedures under these circumstances.

d. Specific storage requirements:

(1) TMs for specific radioactive supply items contain storage criteria for those items. TMs are incorporated in the NRC license and therefore become a required condition for use.

(2) The TM governing an item or the unit RPO can provide information on the types of radioactive material, amounts, and characteristics of a radiation, and the type of RADIAC instrumentation needed to detect the radiation.

(3) Technical Bulletin 43-0116 (Identification of Radioactive Material in the Army Supply System) should be used to identify the type and amount of radioactive material in a particular national stock number (NSN) item.

10. DISPOSAL

a. Unwanted radioactive material, radioactive supply items, or items contaminated with radioactive materials should be processed as radioactive waste. Radioactive waste must be delivered or shipped to the USAREUR RWPF operated by 524th Maint Co (TMDE). The USAREUR RWPF is located in the United States Army Medical Material Center, Building 4145, Husterhoeh Kaserne, Pirmasens. Prior approval of all shipments or deliveries must be obtained from the USAREUR RWPF, 495-6486/7293 or civilian number 06331-866486/867293.

b. The description of the items or material to be turned in should include the following information, as appropriate:

(1) NSN, noun description, and the number of items in each package.

(2) Type and quantity of radioactive materials in each package.

(3) Number of packages, approximate volume, and weight.

(4) Presence of any other hazardous materials (explosive, flammable, corrosive, or compressed gases, or poisonous materials).

c. Accountable items containing radioactive material must be reported to the item manager for disposition instructions. The USAREUR RCO (200th MMC(TA)) (tel: 494-6337/ 7369), can help determine the proper item manager. Repairable items or items having an automatic return code to a CONUS depot must be packaged and shipped as described in paragraph 7. The 524th Maint Co (TMDE) has control of an item until it is packed and ready for shipment.

d. Radioactive commodities that have been damaged require special packaging and transportation care. In general, broken items should be wrapped in two sealed plastic bags and placed in a metal drum before shipment. USAREUR Poster 385-1-14 should be placed inside the package and the shipping document. It is the consignee's responsibility that the drum used has no contamination on the exterior surface and will not leak during shipment.

e. The 524th Maint Co (TMDE) RPO or USAREUR RWPF personnel can provide assistance with packaging and transporting damaged material.

f. Reducing the amount of radioactive waste material to limit shipment and burial expenses is highly supported by the 524th Maint Co (TMDE). A particular

container should be reserved for unwanted or contaminated radioactive material. Materials that are not radioactive will not be placed in the container designed for radioactive materials. Personnel should prevent non-radioactive materials from being added to the radioactive container, rather than separate material once it is placed in the radioactive container. Surveying or compacting the contents of radioactive material containers will be done exclusively at the USAREUR RWPF.

g. Individuals do not need to travel from their units to the RWPF at Pirmasens. USAREUR major, separate, and assigned commanders will designate a central intermediate radioactive waste collection location where excess radioactive supply items or material contaminated with radioactive material can be stored until they are shipped to Pirmasens. Items broken at the unit level will not be stored. Broken items will be delivered directly to the USAREUR RWPF (Pirmasens) for inspection and disposal instructions.

h. RPOs will not transfer or physically move radioactive supply items to a DRMO. Some radioactive supply items are subject to federal screening procedures. These items will not be moved to a property disposal facility until shipping instructions are received from the DRMO. AR 385-11 and DOD Manuals 4140.34M and 4160.21-M describe radioactive items that may be disposed of by normal transfer, sale, or donation (for example, aircraft engines and electron tubes).

11. EMERGENCIES

a. Radiation accident reaction plans may be developed, but it is impossible to establish fixed reaction procedures. The following are types of possible radiological emergencies for USAREUR:

- (1) Explosion.
- (2) Fire.
- (3) Vehicular accident.
- (4) Tank fire.
- (5) Loss of radioactive source.
- (6) Personal injury.

b. Preparation for accidents involving radioactive materials includes establishing contacts and assigning responsibilities before an accident happens. Units and communities will respond to radiological accidents. The 10th MEDLAB, 200th MMC (TA), and USAREUR RWPF can provide technical assistance. Appendix B contains telephone numbers for these units. Local emergency personnel must respond immediately to radiological accidents.

c. 10th MEDLAB Radiological Hygiene Branch personnel will train medical, security, safety, and firefighting personnel to respond to accidents involving radioactive materials (app C). Emergency response procedures for radiological accidents will be incorporated into each community's normal emergency procedures. Emergency personnel will establish

medical procedures for accepting and decontaminating injured persons. Emergency personnel should determine the availability of RADIAC instrumentation, protective clothing, and area marking material before emergencies occur so that they are available when needed.

d. Organizations should rehearse responding to a radiological accident to ensure efforts are coordinated and that plans function. An emergency action plan, applicable to local inventory or training conditions, will be developed and the emergency response planned and rehearsed at least once each year.

e. Accidents or incidents involving radioactive items, including loss, will be reported to the USAREUR RPO, the USAREUR RCO, or the Commander, 10th MFDLAB, as soon as noticed. A report should be made

by telephone immediately, but never later than 24 hours after the incident. The call must be followed by a written report, preferably an electronic message, within 15 days. The message should be sent to CINCUSAREUR HEIDELBERG GE //AEAGA-S(RPO)// with an information copy sent to CDR 200th TAMMC ZWEIFRUFCKEN GE //AEAGD-MMC-RA-R(RCO)//. Required information in the report is: the owning unit; the location, time, and date of the accident; a brief description of what happened; the type of radioactive items involved and serial numbers of each; emergency actions taken; planned actions; the type of investigation planned; and the unit POC and phone number. A final written report (Report of Survey) must be provided through command channels within 60 days to the USAREUR RPO, with a copy furnished to the USAREUR RCO.

APPENDIX A
REFERENCES

A-1. ARMY REGULATIONS

- a. AR 40-5, Preventive Medicine.
- b. AR 40-14, Control and Recording Procedures for Exposure to Ionizing Radiation and Radioactive Materials.
- c. AR 40-46, Control of Health Hazards From Lasers and Other High Intensity Optical Sources.
- d. AR 385-11, Ionizing Radiation Protection.
- e. AR 385-30, Safety Color Code Markings and Signs.
- f. AR 385-40, Accident Reporting and Records.
- g. AR 385-63, Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat.
- h. AR 700-64, Radioactive Commodities in the DOD Supply Systems.

A-2. TECHNICAL BULLETINS

- a. Technical Bulletin (TB) 43-0116, Identification of Radioactive Items in the Army.
- b. TB Med 523, Control of Hazards to Health From Microwave and Radio Frequency Radiation and Ultrasound.
- c. TB Med 524, Occupational and Environmental Health: Control of Hazards to Health From Laser Radiation.

A-3. TECHNICAL MANUALS

- a. Technical Manual (TM) 3-261, Handling and Disposal of Unwanted Radioactive Materials.
- b. TM 3-9905-001-10, Operator's Manual for Marking Set, Contamination: Nuclear, Biological, Chemical (NBC).
- c. TM 8-280, Radiologic Technology.
- d. TM 11-6665-209-10, Operator's Manual for RADIAC Sets, AN/PDR-27J.
- e. TM 11-6665-221-15, Operator's Organizational Direct Support, General Support, and Depot Maintenance Manual: RADIAC Set AN/PDR-10.
- f. TM 38-250, Packaging and Materials Handling: Preparing Hazardous Materials for Military Air Shipments.

A-4. SUPPLY BULLETIN

Supply Bulletin 11-206, Personnel Dosimetry Supply and Service for Technical Radiation Exposure Control.

A-5. *FEDERAL REGULATIONS

- a. Parts 0 through 199, title 10, Code of Federal Regulations, Energy.
- b. Section 1910.96, title 29, Code of Federal Regulations, Ionizing Radiation.
- c. Parts 100 through 177 and 178 through 199, title 49, Code of Federal Regulations, Transportation.
- d. *Regulatory Guide 8.13, Instruction Concerning Prenatal Radiation Exposure.
- e. **Health and Human Services Publication FDA 83-8211, Preparedness and Response to Radiation Accidents.

A-6. UNITED STATES ARMY MATERIEL COMMAND PUBLICATIONS

- a. United States Army Armament, Munitions, and Chemical Command (AMCCOM) Pamphlet 385-1, Handbook for Disposal of Unwanted Radioactive Material (HQ AMCCOM, Rock Island, IL 61299-6000).

- b. ***DARCOM Pamphlet 385-1, Fundamentals of Health Physics for the Radiation Protection Officer.

- c. ***United States Army Material Development and Readiness Command (DARCOM) Handbook 385-1.1-78, Handbook Safety Procedures for Processing Depleted Uranium.

A-7. HOST NATION AND INTERNATIONAL REGULATIONS

- a. European Agreement Concerning the International Carriage of Dangerous Goods by Road (ARD) (Class IV b, United Nation Publication Sales no. E.85 VIII. 1, 3 Volumes).

- b. International Air Transport Association (IATA), Dangerous Goods Regulation, 29th edition (in English) (IATA, 200 Pearl St, Montreal, Quebec, Canada, H3A 2R2).

- c. International Civil Aviation Organizations (ICAO), Technical Instructions for the Safe Transport of Dangerous Goods by Air, 1987/1988 edition (in English). (ICAO, 1000 Sherbrooke St, West Suite 400, Montreal, Quebec, Canada H3A 2R2).

- d. Verordnung ueber den Schutz vor Schaeden durch ionisierende Strahlen, October 1976. (Ordinance on Protection Against Damage and Injuries Caused by Ionizing Radiation, translation November 1977) (GRS mbH, Glockengasse 2, D-5000 Koeln 1)

- e. Verordnung ueber die Befoerderung gefaehrlicher Gueter auf der Strasse (Ordinance Concerning the Carriage of Dangerous Goods by Road). (GRS mbH, Glockengasse 2, D-5000 Koeln 1)

A-8. USAREUR REGULATION

USAREUR Regulation 700-15, Controlled Radioactive Inventory Serialization Program (CRISP).

*May be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

**May be ordered from the United Nations, Sales Section, New York.

***DARCOM publications are produced by the United States Army Materiel Command and may be ordered from HQ AMC, 5001 Eisenhower Ave, Alexandria, VA 22333.

APPENDIX B
POINTS OF CONTACT

SECTION I

RADIATION PROTECTION - OFFICES, TELEPHONE NUMBERS, AND ARMY POST OFFICE (APO) ADDRESSES

Position and Phone Number

Address

Chief, Radiation Hygiene Branch, 7th MEDCOM
ETS 486-8237/8357Commander, 10th Medical Laboratory
ATTN: AEMML-PM-ORD
APO 09180-3619Chief Surgeon, USAREUR
Preventive Medicine
ETS 370-2526/2754Commander in Chief, USAREUR
ATTN: AEAMD-CL-PM
APO 09403-0115USAREUR Radiation Control Officer
ETS 494-6337/7369Commander, 200th MMC (TA)
ATTN: AEAGD-MMC-RA-R
APO 09052-5356USAREUR Radiation Protection Officer
ETS 370-7751/8124
Civilian 06221-27239Commander in Chief, USAREUR
ATTN: AEAGA-SG
APO 09403-0101Chief, USAREUR Radioactive Waste Facility
ETS 495-6486/7293Commander, 524th Maintenance Company
ATTN: AEMXTM-EPN
APO 09138-4628

SECTION II

EMERGENCY RADIATION PROTECTION POINTS OF CONTACT

B-1. HQ USAREUR/7A

B-3. 200th MATERIEL MANAGEMENT CENTER
(THEATER ARMY) RADIATION CONTROL OFFICER

a. Chief, Command Center:

(1) ETS 370-2760/2761/1110
(2) Civilian 06221-57-1110

a. ETS 494-6337/7369

b. Civilian 06371-86-6337

c. After Duty (1630-0700):

b. USAREUR Radiation Protection Officer:

(1) ETS 370-7751/8124
(2) Civilian 06221-57-7751 or
06221-27239
(3) After Duty 06222-1532
(1700-0700)

(1) ETS 494-7145/8258

(2) Civilian 06332-86-7145

c. Chief, Public Information Division, Office of the
Chief, Public Affairs:(1) ETS 370-6647/6359
(2) Civilian 06221-57-6647B-4. EOD UNITS WHERE RADIAC INSTRUMENTS
ARE AVAILABLE

a. 2d Ordnance Detachment (EOD), Grafenwoehr:

(1) ETS 475-6243/8332

(2) Civilian 09641-83-6328

b. 3d Ordnance Detachment (EOD), Augsburg/
Hohenfels:

(1) ETS 434-6594/7556

(2) Civilian 0821-448-6594

c. 20th Ordnance EOD Det, Kaiserslautern:

(1) ETS 489-6414/7434

(2) Civilian 0631-536-6414

d. 21st EOD Ordnance Detachment, Ziegenberg:

(1) ETS 324-3484/3467

(2) Civilian 0641-402-8300

B-2. 10th MEDLAB, RADIATION HYGIENE BRANCH

a. ETS 486-8237/8113
b. Civilian 06371-86-8237/8113
c. After Duty (1700-0700):
(1) ETS 486-7270/8225
(2) Civilian 06371-86-7270

e. 72d Ordnance Detachment (Explosive Ordnance Disposal (EOD)), Bremerhaven:

- (1) ETS 342-8359/8745
- (2) Civilian 0471-801485

f. 168th Explosive Ordnance Disposal Control Center, Mannheim:

- (1) ETS 380-8111/8112
- (2) Civilian 0621-730-8111

g. 512th Ordnance Detachment (EOD), Vilseck:

- (1) ETS 476-2738/2874
- (2) Civilian 09662-83-2611

h. 517th Maintenance (Test, Measurement, and Diagnostic Equipment) (TMDE)) Radioactive Waste Processing Facility (RWPF) point of contact:

(1) 517th Maintenance Battalion (TMDE):

- (a) Military 494-6283/8282
- (b) Civilian 06332-86-8356/6089

(2) USAREUR RWPF:

- (a) ETS 495-6486/7293
- (b) Civilian 06331-86-7293

i. 856th Ordnance Detachment (EOD), Stuttgart:

- (1) ETS 428-2110/2111
- (2) Civilian 07141-88-2110

APPENDIX C
TANK FIRES

SECTION I
FIRE PROCEDURES

C-1. General Information.

a. The procedures for preventing, fighting, and reporting accidents involving fires in tanks uploaded with depleted uranium has been updated to reflect current practices and guidance. This section applies only to accidents when the ammunition has exploded or burned.

b. One major change is that emergency response personnel have successfully used large amounts of water to extinguish engine fires and to prevent the fire from spreading to ammunition.

c. Methods of decontamination depend on fixed and removable radioactivity and the inclusion of host nation and U.S. Army decontamination limits. These limits are outlined in AR 385-11 and host nation publications, but the basic definition of decontamination refers to removing as much unwanted radioactive material as possible.

C-2. Tank Fire Response Procedures Involving Depleted Uranium (Staballoy) Ammunition

a. Technical Bulletin 9-1300-278, 20 November 1987, Guidelines for Safe Response to Handling, Storage, and Transportation Accidents Involving Army Tank Munitions Which Contain Depleted Uranium, shall be followed when USAREUR tank fire procedures are inadequate.

b. This section establishes minimum procedures for preventing, fighting, reporting, and following up on accidents involving fires in tanks uploaded with ammunition containing depleted uranium (Staballoy).

c. Armor units using rounds containing depleted uranium (Staballoy) will have at least one officer familiar with the procedures outlined in this appendix.

d. The primary causes of tank fires have been overheated engines and antennas striking streetcars (strassenbahn) and railroad electric overhead cables. Antennas on tanks must be tied down to a height below 13 feet (ft) (4 meters (m)) in the turret bustle nearest the antenna mount. Organizational clothing, individual equipment, and extra equipment must be stored according to the unit devised loading plans. These plans are aimed at reducing combustible material in the turret area.

e. Actions to be followed when a fire occurs:

(1) The tank crew will:

(a) Attempt to shut down the engine.

(b) Activate fire suppression systems and all hatches (if possible) while evacuating the tank.

(c) Notify the organization chain of command.

(d) Establish a safety perimeter of 300 m (328 yards (yds)) around the accident.

(e) Notify the local military community or host nation fire department.

(f) Coordinate actions with host nation authorities for accidents occurring in areas not under U.S. control.

(2) At the battalion level:

(a) Armor units will have a tank fire control officer (in the rank of captain or higher) familiar with the guidance in this section to implement and coordinate control, reporting, and disposal procedures. The tank fire control officer or the relieving officer will remain in charge until the site is cleared by the USAREUR Radiological Protection Officer (RPO), or by the president of the USAREUR Centralized Accident Investigation Ground (CAIG) Board.

(b) The tank fire control officer or relieving officer will:

1. Do the following when a tank fire occurs:

a. Limit access only to emergency response personnel (firefighters, explosive ordnance disposal (EOD) personnel, the USAREUR RPO, and others, as necessary). The tank fire control officer or relieving officer will record the name and unit of persons entering the safety perimeter (b. below).

b. Establish a minimum safety perimeter of 60 m (66 yds) to prevent injuries from possible explosions if the hatch is closed. If the hatch is open or the round is expelled, a safety perimeter of 300 m (328 yds) is required.

c. Control access to the accident site as described in (b) above and for 20 m (22 yds) under any smoke cloud, if possible.

d. Evacuate injured persons through medical channels. Medical attention for serious injuries takes precedence over decontamination.

e. Prevent people from walking into smoke without wearing a self-contained breathing apparatus (SCBA) or, in an emergency, a field protective mask. Smoke may contain uranium oxides (see app F).

f. Alert firefighters that respiratory protection is needed when ammunition involved may produce hazardous vapors. The tank fire control officer or relieving officer will provide a copy of appendix G to firefighters.

g. Tell medical evacuation personnel that injured personnel may have been exposed to depleted uranium contamination.

h. Immediately report the accident to higher headquarters through emergency action channels.

i. Coordinate actions with host nation authorities for accidents not under U.S. jurisdiction.

2. Do the following when the fire is extinguished:

a. Evacuate personnel injured in the fire. Serious injuries, burns, and broken bones should receive immediate medical attention before decontamination. Injured persons will be identified to medical evacuation personnel as "POSSIBLE DEPLETED URANIUM CONTAMINATION".

b. Restrict personnel from entering the tank before EOD personnel enter.

c. Not allow removal of any equipment.

d. Mark and secure any debris expelled from the tank during the fire. The 517th Maintenance Bn will supply packing material for movement.

(3) Brigade and military community (MILCOM) personnel will:

(a) Notify local military and host nation police to assist in site control.

(b) Notify local fire, military, and civil officials. Personnel will alert firefighters that there is depleted uranium (Staballoy) ammunition present and that respiratory protection is necessary (app F).

(c) Request support from the nearest EOD unit.

(d) Notify the division operations center and the MILCOM and division public affairs officers (PAOs).

(e) Assist with public affairs, as directed by the USAREUR major command (UMC) (USAREUR Reg 10-5) or division PAO.

(4) Division, regiment, and MILCOM personnel will:

(a) Notify the corps or UMC operations center of the accident.

(b) Provide decontamination, cleanup assistance, and other assets as needed to the chemical company involved.

(c) Assist with public affairs, as directed by the corps or UMC PAO. Ensure that the nearest PAO is immediately dispatched to the accident scene.

(d) Investigate tank fires involving a fatality or \$500,000 of property damage (Class A accident, according to AR 385-40) under the USAREUR CAIG Program.

(e) Relinquish control of site to the USAREUR CAIG Board president upon his or her arrival at the accident scene. The USAREUR CAIG Board president will direct security at the site and keep the Commander in Chief, USAREUR, informed of the investigation through channels. Responsibility for all matters is transferred to the USAREUR CAIG Board president.

(5) UMC personnel will:

(a) Notify the USAREUR Operations Center of the accident.

(b) Notify the corps chemical officer of the possible need for decontamination equipment.

(c) Notify the corps safety manager and RPO of the need for onsite radiation protection and safety support.

(d) Move the tank and contaminated material to a designated site for further decontamination, in coordination with the 21st Theater Army Area Command, 200th Materiel Management Center (Theater Army) (200th MMC (TA), and the USAREUR RPO.

(e) The UMC PAO will serve as the command spokesperson, or may delegate this authority to the PAO on the scene. The corps or UMC PAO will ensure that the PAO at the scene is thoroughly briefed and knowledgeable about all aspects of ammunition, vehicles involved, danger zones, and hazards.

(6) USAREUR Operations Center personnel will notify the following organizations of the incident:

(a) The Office of the Deputy Chief of Staff, Personnel, Safety Division.

(b) The Office of the Deputy Chief of Staff, Logistics, Supply and Maintenance Division.

(c) The Office of the Deputy Chief of Staff, Operations, EOD office.

(d) The 10th Medical Laboratory (10th MEDLAB).

(e) The 200th MMC (TA).

(f) The Office of the Chief, Public Affairs, USAREUR.

(g) The Office of the Judge Advocate, USAREUR.

(h) The Command Group, HQ USAREUR/7A.

(i) The 517th Maintenance Battalion.

(7) The USAREUR RPO will:

(a) Send reports to HQDA and United States Army Materiel Command, according to AR 385-40 and AR 385-11.

(b) Provide the tank fire control officer with radiological expertise on decontamination, site survey, and radioactive waste collection and transportation.

(8) The 10th MEDLAB support functions will:

(a) Provide a Radiological Medical Advisory Team for monitoring and decontaminating personnel at the accident site.

(b) Provide the required supplies and equipment to perform personnel monitoring and any decontamination necessary.

(c) Determine which personnel must have bioassay, after the fire has been extinguished.

(9) The 517th Maintenance Bn will provide ng for debris.

f. The following reports are required:

(1) Battalion personnel will immediately report an accident through their chain of command to HQ USAREUR/7A.

(2) Battalion personnel will submit a written report (AR 385-11) giving details of the accident and corrective action taken to the Commander in Chief, USAREUR, ATTN: AEAGA-S (RPO), APO 09403, within 20 days of the accident.

(3) The 200th MMC (TA) will submit a report to the United States Army Armament, Munitions, and Chemical Command RPO (AR 385-11) within 24 hours of the incident. A copy will be furnished to the Commander in Chief, USAREUR, ATTN: AEAGA-S (RPO), APO 09403.

(4) Battalion personnel or the USAREUR CAIG Board president will submit an accident report through command channels (AR 385-40, chap 10).

SECTION II

DECONTAMINATION OF TANK FIRES INVOLVING DEPLETED URANIUM AMMUNITION

C-3. These procedures were developed by the Tank Automotive Command (TARCOM-DRSTA-SP), Warren, for use during tank fires when depleted uranium (Staballoy) ammunition is involved and contamination is detected. The radiation protection officer (RPO) on site will request that the division or corps chemical company implement these procedures after the fire has been extinguished and the explosive ordnance disposal (EOD) detachment personnel declares that the tank interior is safe.

C-4. Division or corps chemical company personnel will decontaminate tank fires involving DU ammunition as follows:

a. Survey the area as directed by the USAREUR RPO or 10th Medical Laboratory (10th MEDLAB) RCO.

b. Use engineering tape to control entry to tank when no contamination is identified. Encircle the tank with the tape at a distance of 10 feet.

c. Use AN/PDR-60, AN/PDR-56F, or equivalent instruments under dirty conditions; will use AMN/PDR-27 when surfaces are wet. (The 10th MEDLAB will use more sensitive detectors.)

d. Survey the outside of the tank for contamination by wiping the surface with paper towels, cloth, or other available material.

e. Check for ground-level contamination on the paper towel with an AN/PDR-60 or equivalent.

Clean the tank as follows if readings are above background level:

(1) Damp mop dry surface to remove dust and dry particles.

(2) Damp wipe nonporous surfaces (metal or plastic)

(3) Use water and detergent for mopping and wiping.

(4) Dispose of cleaning residue as radioactive waste in metal containers. Containers may be obtained from 517th Maintenance Bn or the USAREUR Radioactive Waste Processing Facility.

NOTE: Repeat steps (1) through (4), until readings are reduced to background level. Survey the area after each attempt of decontamination by wiping the surface with a paper towel, then by taking meter readings of the paper towel.

g. Seal openings to prevent interior contamination from escaping to the environment after decontaminating the exterior of the tank.

h. Survey personnel with an instrument recommended by the USAREUR RPO or 10th MEDLAB personnel for possible contamination.

i. Decontaminate the interior of the tank at the retrograde facility.

j. Survey both the taped off area and the area under the tank for contamination.

k. Dispose of ammunition explosive components through EOD channels. The remaining debris will be disposed of as radioactive waste.

SECTION III

TECHNICAL CONSIDERATIONS FOR TANK FIRES INVOLVING DEPLETED URANIUM AMMUNITION

C-5. During a fire, depleted uranium (Staballoy) creates a toxicological hazard by producing both insoluble and soluble oxides. Failure to wear proper respiratory protection will expose the lungs to insoluble oxides. Handling bare depleted uranium (Staballoy) without gloves exposes the skin to about 24 millirem per hour of beta and gamma radiation. Eyes may get low level beta exposure if glasses are not worn. Exposures are usually low during practice.

C-6. Inhaling soluble oxides of uranium can injure the kidneys if respiratory protection is not worn. Bioassay samples must be taken within 3 to 4 days of possible exposure. Samples taken later will not detect even significant inhalation exposures. Lung scans will detect insoluble oxides remaining in lungs.

C-7. Oxides are readily spreadable and suspendable unless they are moistened or other controls are used. Uranium oxides ranging from 0.1 micron to 10 micron take 30 to 120 minutes to fall 1 meter in the air.

C-8. Less than 1 percent of the M774 rounds will oxidize in fire. Alpha, beta, and gamma instruments will detect resultant oxides. Depleted uranium (Staballoy) rounds with a combustible cartridge case such as the M829 produce 50 to 100 percent of ashing.

SECTION IV FIRE FIGHTING PROCEDURES FOR FIRE DEPARTMENTS

Tank fires containing depleted uranium stabilloy ammunition

C-9. Firefighters will:

- a. Prevent personnel and equipment from entering smoke clouds.
- b. Expect high intensity ammunition fires and small explosions. Ammunition smoke and fumes are toxic.
- c. Make no attempt to fight the fire when ammunition is directly involved or when rounds have been expelled in a fire. Fire trucks will be at least 60 meters (m) from the fire when the tank hatch is closed, or 300 m when the hatch is open.
- d. Wear a self-contained breathing apparatus. The M17A2 mask with the M13A2 filter elements is recommended.

C-10. A minimum number of firefighters will be used to combat a fire.

C-11. When ammunition is not involved in a crew compartment fire and the hatches are open, the fire should be fought with water stream, spray, and fog. Firefighters will wear as much protective cover as possible.

C-12. If the tank engine is on fire, dry chemicals, foam, or water should be used. Water is highly effective in cooling the engine and preventing the fire from involving ammunition.

BRANDBEKAEMPFUNGSREGELN FUER FEUERWEHREN

Brand in Panzern beladen mit angereicherter Uran Munition

C-9. Aufgaben der Feuerwehr:

- a. Bei der Annäherung an die Brandstelle ist das Eindringen von Fahrzeugen und Personal in die Rauchwolke zu vermeiden
- b. Mit hoher Waermeentwicklung und kleineren Explosionen ist zu rechnen. Entstehender Rauch und Daempfe sind giftig.
- c. Hat der Brand die Munition bereits erfasst oder wurde Munition herausgeschleudert, darf kein Loeschversuch unternommen werden. Loeschfahrzeuge duerfen in diesem Fall nicht naeher als 60 Meter mit geschlossenen Luken oder 300 Meter, wenn die Luken offen sind heranfahren.
- d. Feuerwehrleute, die sich dem brennenden Panzer naehern, muessen Atemgeraete, Schutzbekleidung und Handschuhe tragen.

C-10. Nur die benoetigte Mindestzahl von Feuerwehrleuten sollte zur direkten Brandbekaempfung eingesetzt werden.

C-11. Wenn bei einem Brand im Turm des Panzers die Munition nicht erfasst ist und die Luken offen sind, soll mit Wasser-Vollstrahl oder Spruehstrahl geloescht werden. Dabei ist auf groesstmoeegliche Deckung zu achten.

C-12. Wenn der Brand den Motorraum erfasst hat, sollte nur Trockenpulver, Luftschaum oder Wasser zum Loeschen benutzt werden. Wasser sollte benutzt werden, um ein Uebergreifen des Feuers auf die Munition zu verhindern.

GLOSSARY

SECTION I
ABBREVIATIONS

1L IEDLAB 10th Medical Laboratory
49 CFR Title 49, Code of Federal Regulations, Transportation
200th MMC (TA) 200th Materiel Management Center (Theater Army)
APO Army Post Office
Bn battalion
CAIG Centralized Accident Investigation Ground
Ci Curies
CINCUSAREUR Commander in Chief, USAREUR
Co company
cpm counts per minute
DARCOM United States Army Materiel Development and Readiness Command
DCSENGR Deputy Chief of Staff, Engineer, USAREUR
DCSLOG Deputy Chief of Staff, Logistics, USAREUR
DCSOPS Deputy Chief of Staff, Operations, USAREUR
DCSPER Deputy Chief of Staff, Personnel, USAREUR
DOT Department of Transportation
dpm dose per minute
DRMO defense reutilization marketing office
DU depleted uranium
EOD explosive ordnance disposal
ft feet
GE Federal Republic of Germany
GSC General Support Center, Kaiserslautern
IATA International Air Transport Association

ICAO

LRPO
m
MILCOM
n.o.s.
NRC
NSN
OCIE

ODCSOPS

ODCSPER

PAO
POC
RADIAC

RCC
RCO
RPO
RWPF
SCBA
TB
TM
TMDE

yds

International Civil Aviation Organizations
local radiation protection officer
meters
military community
not otherwise specified
U.S. Nuclear Regulatory Commission
national stock number
organizational clothing, individual equipment
Office of the Deputy Chief of Staff, Operations, HQ USAREUR/7A
Office of the Deputy Chief of Staff, Personnel, HQ USAREUR/7A
public affairs officer
point of contact
radiation, detection, indication, and computation
radiation control committee
radiation control officer
radiation protection officer
radioactive waste processing facility
self-contained breathing apparatus
technical bulletin
technical manual
test, measurement, and diagnostic equipment
yards

SECTION II
TERMS

A1 or A2 quantities
Values for radionuclides or maximum value allowed in Type A packages.

AN/PDR

A measuring device (equipment) for monitoring alpha, beta, and gamma ray emission.

